Under the Big Sky
June 9, 2008

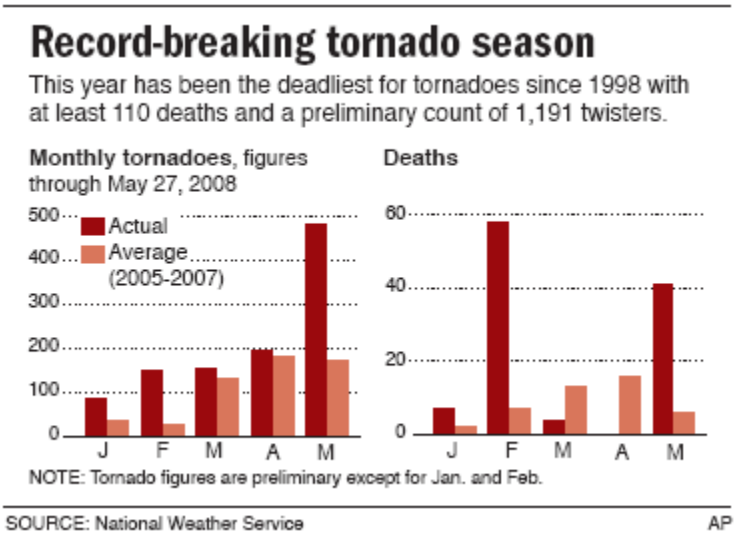
Severe Thunderstorm Watch: Conditions are favorable in the next 6 hours for severe thunderstorms to occur in and near the watch box area. Prepare for severe weather in the next few hours, have the television, radio or internet accessible so you can stay informed.
Tornado Watch: Conditions are favorable in the next 6 hours for severe thunderstorms and potentially tornadoes to occur in and near the watch box area. Prepare for severe weather with the possibility of tornadoes in the next few hours, have the television, radio or internet accessible so you can stay informed.
Severe Thunderstorm Warning: Issued when ¾" hail and/or damaging winds of 58 mph or higher are occurring or expected to occur in the very near future. Seek Shelter Immediately!
Tornado Warning: Issued when a tornado (violently rotating column of air from the base of the cloud to the ground) is either occurring or expected to occur in the very near future. Seek Shelter Immediately!

The photo above is that of the Windsor, CO tornado that occurred on May 22nd. I went to college just a few miles east of there in Greeley, CO. Memorial Day weekend brought even more storms and tornadoes with an EF-5 rated tornado affecting the town of Parkersburg, Iowa. One of our weather enthusiasts who lives near Medicine Lake in the summer, but is from Colorado most of the year called and told us that his daughter worked at the day care facility that evacuated 130 children across the street to a local bank. The school was later seriously damaged.

Windsor Colorado Tornado: EF-2 or 3, final rating not released yet
http://www.youtube.com/watch?v=GfYuTooalXQ&feature=related
http://www.crh.noaa.gov/bou/?n=tor_radar_052208

Parkersburg, Iowa Tornado: EF-5
http://picasaweb.google.com/generaldcmills/ParkersburgTornado/
http://mesonet.agron.iastate.edu/cases/080525/dmx_parkersburg_damage/
http://www.youtube.com/watch?v=1grz-8PNsFA&feature=related

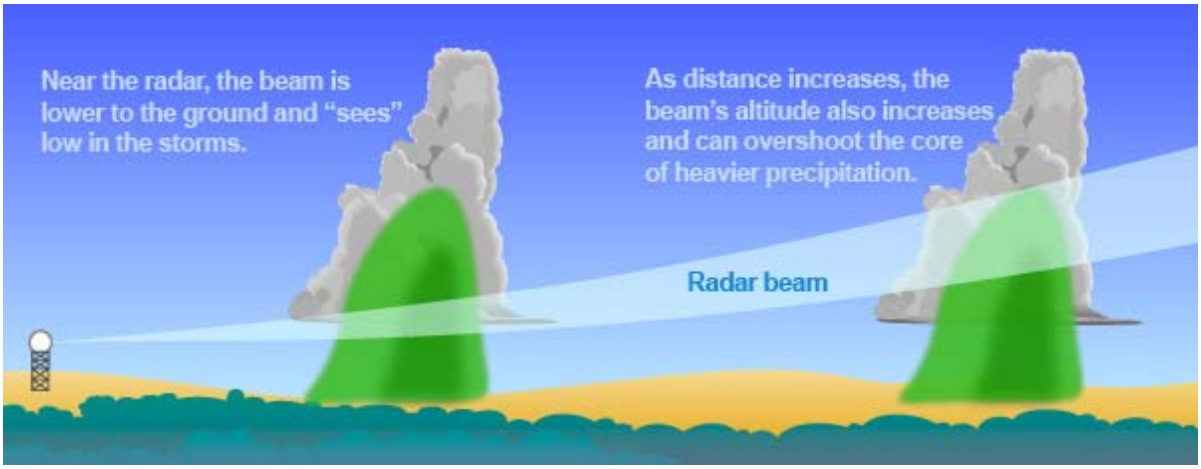
Speaking of tornados, you may have heard that it is a record breaking year for the number of tornados. The Storm Prediction Center keeps track of all preliminary and final tornado reports. Often times there are many reports of tornados, but when they correlate all the data from the survey and the reports, they find that it was one tornado, but people were located in different areas and reporting it. You can read a recent article on the record number of tornadoes this year at: http://www.msnbc.msn.com/id/24845723/



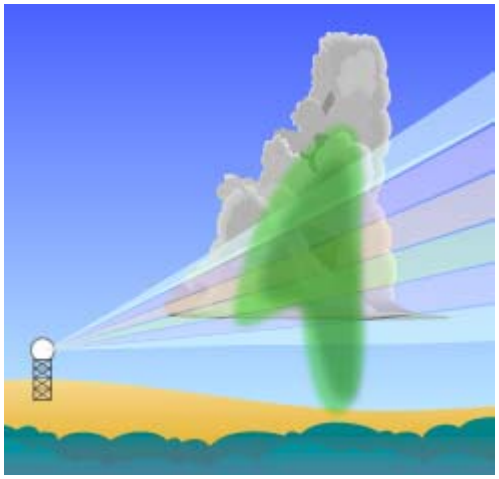
Are you color blind? I had a comment this week regarding our hydrology website being hard to use for people who are color blind. There are two websites that the NWS recommends for use with it's radar imagery pages that can help those who are color blind, and I would hope that it also helps with the status of river gages (green-non flood, red-flood). To download those tools, visit: http://www.nws.noaa.gov/credits.php#plugins

Radar Data question: What's the difference between base reflectivity and composite reflectivity? Reflectivity is a measurement of how large the particles are in the atmosphere.

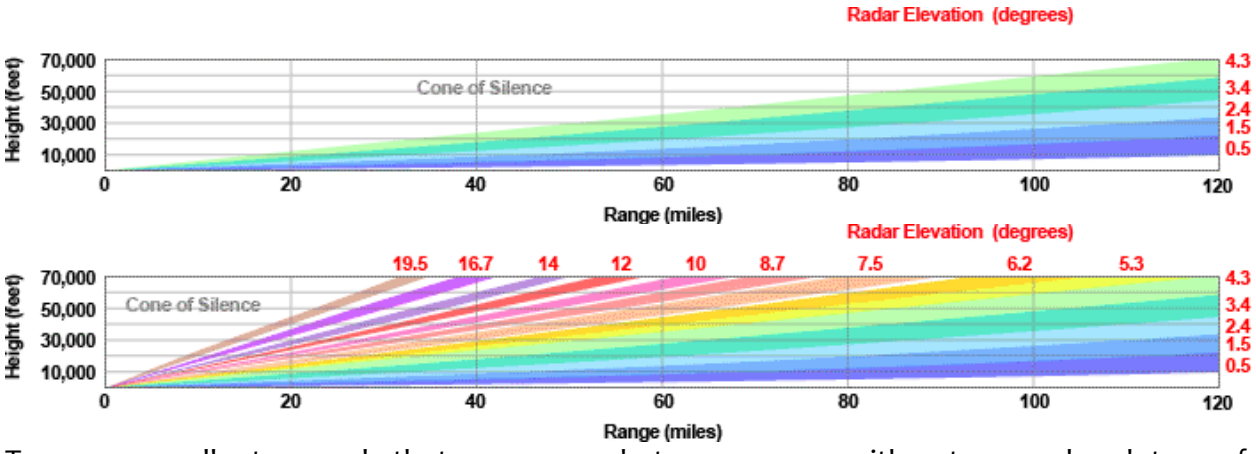
This is a common question I get at spotter presentations, and it shows me that many of you are online and looking at this information. The weather radar rotates around 360 degrees, and can get information as far as 250 nm away. The lowest tilt on the radar is at a ½ degree. This is the "base elevation" for the radar. So, when you look at a base reflectivity image, you are getting the lowest slice of the atmosphere that the radar can see. In Glasgow, where the radar is located, that is just above ground level. The farther you get from the radar, you have the curvature of the earth to contend with, and so by the time that half degree elevation is 125 miles out, the beam is around 15,000 feet above ground. So, base reflectivity is showing you the strongest returns at the lowest slice of the radar that we can see.



But, the radar doesn't just look at the half degree elevation. When we are expecting precipitation or thunderstorms, we switch the radar from clear air mode which has 5 slices it uses to precipitation mode which has 14 slices of the atmosphere. Since thunderstorms can be well over 60,000 feet, we need to be able to look higher up in the storm as well. The highest tilt on the radar is 19.5 degrees. Composite reflectivity is a combination of all the layers the radar may be looking at, and it shows you the strongest returns in that layer, which may be higher up in the storm, not at the base level.



Below are examples of elevations used in clear air (top) and precipitation (bottom) mode on the radar:



To see an excellent example that compares what you may see with a storm and each type of reflectivity image go to: http://www.srh.noaa.gov/jetstream//doppler/comprefl.htm

For more information on weather radar, visit:
http://www.srh.noaa.gov/jetstream//doppler/doppler_intro.htm

NWS Glasgow Happenings:

One of our lead forecasters, who is also our hydrology focal point, attended an NWS hosted hydrology conference in Great Falls. Participants included local and state agencies as well as federal agencies within Montana and throughout the US who all have a stake in water and drought issues in the state.

Our last Skywarn presentation of the season was conducted in Poplar. The Fort Peck Tribal Health department requested the training and there were representatives from several BIA and tribal agencies represented. I also got to meet one of our newest Disaster and Emergency Services coordinators in our warning area, Chris Headdress.

Earlier last week, Valley County and the US Army Corps of Engineers held a tabletop exercise involving a partial breach of Fort Peck Dam. Over 40 participants from many agencies participated in the scenario. Getting people together before a disaster is crucial, and it provided an opportunity for people to discuss what their role would be and the capabilities that they have. This week, in a spin-off from the larger scenario, Valley County Health Department utilized the Valley County Amateur Radio Club and our office to relay a message to the State of Montana Department of Public Health and Human Services. The scenario assumed that all land lines and cell phones would not work, and it showed that ham radio is a viable way to reach out if we are isolated during a disaster.